

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective sections of the Climate and Crop Service. The name of the section director is given after each summary.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 49.6°, or 5.0° above normal; the highest was 88°, at Mount Willing on the 10th, and the lowest, 11°, at Hamilton on the 1st and at Opelika and Valleyhead on the 3d. The average precipitation was 5.80, or about 1.34 below normal; the greatest monthly amount, 8.28, occurred at Riverton, and the least, 0.82, at Clanton.—*F. P. Chaffee.*

Arizona.—The mean temperature was 39.5°, the highest was 83°, at Buckeye on the 3d, and the lowest, 23° below zero, at Fort Defiance on the 25th. The average precipitation was 2.23; the greatest monthly amount, 5.70, occurred at Pinal Ranch, while none fell at Fort Mohave and Texas Hill.—*W. T. Blythe.*

Arkansas.—The mean temperature was 45.5°, or 6.0° above normal; the highest was 81°, at Beebranch on the 10th, and the lowest, 10°, at Keesees Ferry, Lacrosse, and Newport on the 2d. The average precipitation was 7.93, or 3.81 above normal; the greatest monthly amount, 14.50, occurred at Pinebluff, and the least, 2.11, at Witts Springs.—*F. H. Clarke.*

California.—The mean temperature was 41.0°, or 3.7° below normal; the highest was 88°, at Nordhoff on the 1st and 2d, and the lowest, 24° below zero, at Bodie on the 11th. The average precipitation was 1.08, or 2.82 below normal; the greatest monthly amount, 6.37, occurred at Moses House, while none fell at several stations.—*W. H. Hammon.*

Colorado.—The mean temperature was 21.2°, or 2.5° below normal; the highest was 80°, at Minneapolis on the 4th, and the lowest, 36° below zero, at Rangely on the 25th and at Steamboat Springs on the 26th. The average precipitation was 0.60, or about 0.20 below normal; the greatest monthly amount, 3.50, occurred at Ruby, while none fell at Fort Morgan and Wallet.—*F. H. Brandenburg.*

Florida.—The mean temperature was 60.4°, or slightly above normal; the highest was 90°, at Kissimmee on the 19th, and the lowest, 16°, at Jasper on the 3d. The average precipitation was 0.74, or decidedly below normal; the greatest monthly amount, 2.06, occurred at Quincy, while none fell at Lemon City.—*A. J. Mitchell.*

Georgia.—The mean temperature was 51.2°, or 4.4° above normal; the highest was 88°, at Bellville on the 11th and 22d, and the lowest, 9°, at Hawkinsville on the 2d. The average precipitation was 2.51, or 2.27 below normal; the greatest monthly amount, 7.13, occurred at Greenbush, and the least, 0.23, at Brag.—*J. B. Marbury.*

Idaho.—The mean temperature was 17.6°; the highest was 60°, at Challis on the 1st, and the lowest, 40° below zero, at Rexburg on the 24th. The average precipitation was 1.43; the greatest monthly amount, 3.40, occurred at Marysville, and the least, 0.22, at Pollock.—*D. P. McCallum.*

Illinois.—The mean temperature was 30.6°, or 5.5° above normal; the highest was 70°, at Cairo on the 9th and at Cisne and Mount Vernon on the 12th; the lowest was 8° below zero, at Scales Mound on the 29th. The average precipitation was 4.20, or 1.44 above normal; the greatest monthly amount, 7.11, occurred at Grayville, and the least, 1.85, at Lanark.—*C. E. Linney.*

Indiana.—The mean temperature was 33.4°, or 6.8° above normal; the highest was 70°, at Rockville on the 12th, and the lowest, 2° below zero, at Richmond on the 2d. The average precipitation was 5.27, or 2.21 above normal; the greatest monthly amount, 11.60, occurred at Vevay, and the least, 0.82, at Logansport.—*C. F. R. Wappenhans.*

Iowa.—The mean temperature was 23.4°, or considerably above normal; the highest was 52°, at Keokuk on the 7th, and the lowest, 11° below zero, at Cedar Rapids on the 27th. The average precipitation was 1.60, or nearly normal; the greatest monthly amount, 5.32, occurred at Ovid, and the least, trace, at Mason City.—*G. M. Chappel.*

Kansas.—The mean temperature was 31.9°, or 3.8° above normal; the highest was 75°, at Fallriver and Ottawa on the 11th, and the lowest, 3° below zero, at Minneapolis on the 26th. The average precipitation was 1.72, or 0.79 above normal; the greatest monthly amount, 4.97, occurred at Sedan, and the least, 0.04, at Colby.—*T. B. Jennings.*

Kentucky.—The mean temperature was 40.0°, or 5.5° above normal; the highest was 72°, at Ashland and Frankfort on the 12th, and the lowest, 6°, at Vanceburg on the 3d. The average precipitation was 8.76, or 4.50 above normal; the greatest monthly amount, 11.99, occurred at Bowling Green, and the least, 5.85, at Sergeant.—*D. J. O'Connor.*

Louisiana.—The mean temperature was 55.5°, or over 4.0° above normal; the highest was 87°, at White Sulphur Springs on the 12th,

and the lowest, 12°, at Mansfield on the 2d. The average precipitation was 6.32, or about 1.00 above normal; the greatest monthly amount, 12.25, occurred at Oakridge, and the least, 0.80, at Port Eads.—*R. E. Kerkum.*

Maryland and Delaware.—The mean temperature was 35.5°, or 4.2° above normal; the highest was 72°, at Grantsville, Md., on the 15th, and the lowest, 2° below zero, at Deerpark, Md., on the 30th. The average precipitation was 3.57, or 0.37 above normal; the greatest monthly amount, 8.95, occurred at Sunnyside, Md., and the least, 1.24, at Pocomoke City, Md.—*F. J. Waltz.*

Michigan.—The mean temperature was 23.9°, or 2.7° above normal; the highest was 63°, at Coldwater and Grape on the 12th, and the lowest, 19° below zero, at Humboldt on the 28th and at Omer on the 30th. The average precipitation was 2.91, or 0.48 above normal; the greatest monthly amount, 5.30, occurred at Manistee, and the least, 0.47, at Iron River.—*C. F. Schneider.*

Minnesota.—The mean temperature was 18.3°, or about 9.0° above normal; the highest was 49°, at Luverne on the 6th and at Collegeville on the 18th, and the lowest, 36° below zero, at Tower on the 28th. The average precipitation was 0.16, or 0.70 below normal; the greatest monthly amount, 0.87, occurred at St. Charles.—*T. S. Outram.*

Mississippi.—The mean temperature was 51.0°, or 5.2° above normal; the highest was 89°, at Mayersville on the 12th, and the lowest, 10°, at Ripley and French Camp on the 2d and at Yazoo City on the 7th. The average precipitation was 7.22, or 1.72 above normal; the greatest monthly amount, 13.58, occurred at Austin, and the least, 1.68, at Poplarville.—*R. J. Hyatt.*

Missouri.—The mean temperature was 34.3°, or 6.0° above normal; the highest was 75°, at Lamar on the 11th, and the lowest, 10° below zero, at Potosi on the 2d. The average precipitation was 3.97, or 1.95 above normal; the greatest monthly amount, 7.31, occurred at Poplarbluff, and the least, 1.98, at Houston.—*A. E. Hackett.*

Montana.—The mean temperature was 22.3°, or greatly above normal; the highest was 64°, at Greatfalls on the 31st, and the lowest, 22° below zero, at Augusta on the 9th. The average precipitation was 0.36, or less than normal; the greatest monthly amount, 1.61, occurred at Columbia Falls, and the least, trace, at Poplar and Wibaux.—*J. Warren Smith.*

Nebraska.—The mean temperature was 27.0°, or about 9.0° above normal; the highest was 63°, at Beatrice on the 6th, and the lowest, 20° below zero, at Camp Clark on the 26th. The average precipitation was 0.67, or about normal; the greatest monthly amount, 2.75, occurred at Rulo, while none fell at Haigler.—*G. A. Loveland.*

Nevada.—The mean temperature was 20.4°, or 6.8° below normal; the highest was 63°, at Candelaria on the 2d and 4th, and the lowest, 28° below zero, at Elko on the 11th. The average precipitation was 0.69, or about half the usual amount; the greatest monthly amount, 2.90, occurred at Verdi, and the least, trace, at Carlin and Hot Springs.—*R. F. Young.*

New England.—The mean temperature was 21.9°, or 1.1° below normal; the highest was 58°, at Somerset, Mass., on the 13th, and the lowest, 39° below zero, at Flagstaff, Me., on the 29th. The average precipitation was 5.03, or 1.14 above normal; the greatest monthly amount, 8.06, occurred at Jacksonville, Vt., and the least, 2.60, at Burlington, Vt.—*J. W. Smith.*

New Jersey.—The mean temperature was 32.6°, or nearly 3.0° above normal; the highest was 64°, at Moorestown on the 23d, and the lowest, 10° below zero, at Rivervale and Englewood on the 30th. The average precipitation was 4.20, or nearly normal; the greatest monthly amount, 5.90, occurred at Englewood, and the least, 2.79, at Clayton.—*E. W. McGann.*

New Mexico.—The mean temperature was 31.3°, or 3.3° below normal; the highest was 78°, at Eddy on the 3d, and the lowest, 24° below zero, at Buckmans on the 19th. The average precipitation was about normal; the greatest monthly amount, 2.43, occurred at Winsors, and the least, trace, at Engle.—*H. B. Hersey.*

New York.—The mean temperature was 24.6°, or 1.5° above normal; the highest was 62°, at Westfield on the 12th and 13th, and the lowest, 37° below zero, at Canton on the 30th. The average precipitation was 3.89, or 0.98 above normal; the greatest monthly amount, 7.20, occurred at Keene Valley, and the least, 1.33, at Fleming.—*R. M. Hardinge.*

North Carolina.—The mean temperature was 44.3°, or about 0.4° above normal; the highest was 80°, at Newbern on the 12th, and the lowest, zero, at Highlands on the 2d. The average precipitation was 2.63, or nearly 2.00 below normal; the greatest monthly amount, 6.40, occurred at Bryson City, and the least, 1.40, at Fairbluff and Wilmington.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 15.0°, or 11.8° above normal; the highest was 69°, at Berthold Agency on the 4th, and the

lowest, 32° below zero, at McKinney on the 31st. The average precipitation was 0.13, or 0.46 below normal; the greatest monthly amount, 0.65, occurred at Napoleon, and the least, trace, at a number of stations.—*B. H. Bronson.*

Ohio.—The mean temperature was 32.4°, or 5.0° above normal; the highest was 71°, at Canton on the 12th, and the lowest, 18° below zero, at Levering on the 2d. The average precipitation was 5.25, or 2.00 above normal; the greatest monthly amount, 11.69, occurred at Cherryfork, and the least, 2.53, at Dupont. The month was the wettest January for sixteen years.—*H. W. Richardson.*

Oklahoma.—The mean temperature was 40.0°; the highest was 77°, at Anadarko on the 11th, and the lowest, 7°, at Clifton. The average precipitation was 3.09; the greatest monthly amount, 5.86, occurred at Tahlequah, and the least, 0.80, at Putnam.—*J. I. Widmeyer.*

Oregon.—The mean temperature was 34.3°, or 0.4° below normal; the highest was 64°, at Ashland and Langlois, and the lowest, 21° below zero, at Burns. The average precipitation was 3.87, or 2.56 below normal; the greatest monthly amount, 14.26, occurred at Bay City, and the least, 0.27, at Silverlake.—*B. S. Pague.*

Pennsylvania.—The mean temperature was 30.7°, or 3.4° above normal; the highest was 67°, at Greensboro and Pittsburg on the 12th, and the lowest, 16° below zero, at Lawrenceville, on the 2d. The average precipitation was 4.25, or 0.73 above normal; the greatest monthly amount, 7.57, occurred at Johnstown, and the least, 1.32, at Reedsville.—*T. F. Townsend.*

South Carolina.—The mean temperature was 49.2°, or 3.2° above normal; the highest was 82°, at Trial on the 10th, and the lowest, 8°, at Central on the 2d. The average precipitation was 1.80, or 2.60 below normal; the greatest monthly amount, 4.06, occurred at Central, and the least, 0.19, at Charleston and Yemassee.—*J. W. Bauer.*

South Dakota.—The mean temperature was 22.8°, or about 12.0° above normal; the highest was 63°, at Harney on the 2d, and the lowest, 22° below zero, at Eureka on the 29th. The average precipitation was 0.24, or 0.28 below normal; the greatest monthly amount, 1.50, occurred at Oelrichs, while none fell at several stations.—*S. W. Glenn.*

Tennessee.—The mean temperature was 43.8°, or about 5.5° above normal; the highest was 75°, at Chattanooga and St. Joseph on the 11th and at Newport on the 12th, and the lowest, 3°, at Silverlake on the 2d. The average precipitation was 8.81; in the eastern portion it was 2.50 above normal; in the middle, 4.25; and in the western, 6.75; the greatest monthly amount, 14.86, occurred at Trenton, and the least, 4.02, at Bristol.—*H. C. Bate.*

Texas.—The mean temperature for the State was 2.4° above the normal. There was a general excess in all sections, except over the panhandle, where it was about the normal, and over west Texas, where there was a slight deficiency, with the greatest, 2.3°, in the vicinity of El Paso. The excess was slight over north Texas and in

localities over the east coast district, while it ranged from 2.2° to 6.4° over central, southwest, and east Texas, and the western portion of the coast district, with the greatest in the vicinity of Palestine. The highest was 91°, at Fort Ringgold on the 24th, and the lowest, 5°, at Tulia on the 20th. The average precipitation for the State was 0.51 below the normal. There was a slight excess along the immediate east coast and over the panhandle and north Texas, with the greatest, 2.84, in the vicinity of Longview, while there was a general deficiency over the other portions of the State, but the deficit was comparatively light, not amounting to as much as 1.00, except over the eastern portion of southwest Texas and the central and western portions of the coast district, where it ranged from 1.00 to 3.03, with the greatest in the vicinity of Brazoria. The greatest monthly amount, 9.42, occurred at Longview, while none fell at several stations.—*I. M. Cline.*

Utah.—The mean temperature was 16.9°; the highest was 69°, at Thistle on the 1st, and the lowest, 34° below zero, at Fort Duchesne on the 25th. The average precipitation was 1.07; the greatest monthly amount, 2.65, occurred at Pahrpah, and the least, 0.15, at Fillmore.—*J. H. Smith.*

Virginia.—The mean temperature was 39.9°, or about 3° or 4° above normal; the highest was 79°, at Cape Henry on the 22d, and the lowest, 2°, at Burkes Garden and Monterey on the 2d. The average precipitation was 2.62, or 1.76 below normal; the greatest monthly amount, 6.40, occurred at Bigstone Gap, and the least, 1.05, at Richmond.—*E. A. Evans.*

Washington.—The mean temperature was 32.6°, or nearly normal; the highest was 61°, at Clearwater on the 1st, and the lowest, 9° below zero, at Fort Spokane on the 24th. The average precipitation was 3.16, or 2.00 below normal; the greatest monthly amount, 15.62, occurred at Clearwater, and the least, trace, at Bridgeport.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 37.1°, or about 3.0° above normal; the highest was 75°, at Uppertract on the 13th, and the lowest, 5° below zero, at Powellton on the 2d. The average precipitation was 5.10, or about 1.50 above normal; the greatest monthly amount, 8.04, occurred at Point Pleasant, and the least, 2.24, at Green Sulphur Springs.—*H. L. Ball.*

Wisconsin.—The mean temperature was 21.3°, or about 5.0° above normal; the highest was 55°, at North Crandon on the 18th, and the lowest, 22° below zero, at the same station on the 31st. The average precipitation was 1.22, or slightly below normal; the greatest monthly amount, 4.00, occurred at Port Washington, and the least, 0.03, at Osceola.—*W. M. Wilson.*

Wyoming.—The mean temperature was 17.7°, or 5.1° below normal; the highest was 60°, at Fort Laramie on the 3d, and the lowest, 40° below zero, at Greenriver on the 26th. The average precipitation was 0.55, or 0.11 below normal; the greatest monthly amount, 1.55, occurred at Greenriver, and the least, trace, at Otto.—*W. S. Palmer.*

RIVER AND FLOOD SERVICE.

By PARK MORRILL, Forecast Official, in charge of River and Flood Service.

After a fall during the earlier part of January, the Ohio and its chief tributaries, the Cumberland and Tennessee, rose rapidly until about the 25th. The consequent rise in the lower Mississippi was sharp and continuous to the end of the month. On the last day the stage at Cairo was 4.4 feet above the danger line; the river at Memphis had reached the danger line and was less than a foot below at Vicksburg. The western tributaries are all at low stages and, as the Ohio flood is fast running out, no serious conditions will arise from the precipitation which has already fallen. The lower river, however, is well filled, and heavy rainfall in the early part of February would cause a flood.

The highest and lowest water, mean stage, and monthly range at 117 river stations are given in the accompanying table. Hydrographs for typical points on seven principal rivers are shown on the accompanying chart. The stations selected for charting are: Keokuk, St. Louis, Cairo, Memphis, and Vicksburg, on the Mississippi; Cincinnati, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

The following résumé of river stages and conditions of navigation in the respective streams is compiled from reports by the officials of the Weather Bureau at various river stations and section centers:

Hudson River. (Reported by A. F. Sims, Albany, N. Y.)—On the 1st of January, notwithstanding an air temperature of 4° below zero, a few open spots were still to be seen at places here and there in the tide-water portion of the Hudson, due to the water being kept in a state of agitation. On the 4th the snow on the watershed area of the Hudson averaged 8 inches. The ice formation in the principal ice-harvesting districts is very lumpy, which necessitates much planing prior to its being housed.

On the 18th the snow on the watershed of the Hudson ranged from 9 inches at Saranac to a trace at Poughkeepsie, and the ice in the Hudson River ranged from 10 inches at Waterford to floating ice at Newburg. The ice was massed in huge blocks, rendering ice harvesting impracticable, and even preventing persons from crossing. In front of many houses along the river there is a jumbled mass of broken ice piled many feet and in the ice channels extending down to the bottom. The best ice will be harvested from behind the dikes and in the creeks.

The weather and temperature conditions of the 23d rendered the ice mushy and so soft that a pike pole could be sunk to the depth of several inches. On the 24th the river from the Poughkeepsie bridge to New York was entirely free of ice; all ferryboats below Poughkeepsie were running. At Albany the ice was piled in jagged masses. At Vanwies Point a smooth unbroken surface of clear ice, extending from shore to shore, began and remained unbroken to a point a short distance above Poughkeepsie bridge. From Fishkill to New York there was nothing to indicate that the river had been frozen, not even a cake of ice was seen on the river banks, except in places behind the dikes.

The end of the month finds the watershed of the Hudson with a good covering of snow, and the river with a good quality of ice, except at Albany, where no ice can be harvested this season on account of the gorge formation.

Susquehanna River. (Reported by E. R. Demain, Harrisburg, Pa.)—The waters of the Susquehanna and its tributaries were higher than is